UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,943	12/18/2001	Paul Edward Gorday	CM03638J	2584

7590 05/18/2006

Andrew S. Fuller
Motorola, Inc.
Law Department
8000 West Sunrise Boulevard
Fort Lauderdale, FL 33322

EXAMINER	
AGHDAM, FRESHTEH N	
ART UNIT	**PAPER NUMBER**
2611	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/022,943	Applicant(s) GORDAY ET AL.	
	Examiner Freshteh N. Aghdam	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,11,12 and 14-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,11,12 and 14-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, see page 7, filed 3/6/2006, with respect to the rejection(s) of claim(s) 1, 11, and 14 under Jones et al (US 6,108,317) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Jones et al, and further in view of Horne (US 6,026,118).

Claim Objections

Claim 21 is objected to because of the following informalities:

Status of claim 21 is unknown; therefore, for examination purposes, examiner made the assumption that claim 21 is cancelled, since claim 21 was dependent on the cancelled claim 20 in the previous set of claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 11, 12, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US 6,108,317), and further in view of Horne (US 6,026,118).

As to claims 1 and 14, Jones teaches a transmitter (Fig. 7B1) for generating first and second modulation signals in response to first and second input data symbols (i.e. in-phase and quadrature components) in a communication system comprising: a transmit memory for storing a code sequence (i.e. mother or master code sequence); a first circular shifting means for circular shifting said code sequence by a first circular shift said first shifting means being coupled to said mother code sequence generator; and a second circular shifting means for reversing said code sequence and circular shifting the reversed code sequence by a second circular shift, said second shifting means being coupled to said mother code sequence generator and generating a second encoded sequence (Fig. 7B1; Col. 19, Lines 15-31 and 60-67). Jones does not expressly teach that the circular shifting amount of the code sequence is based on the value of the data symbol. Horne teaches shifting a circular code based on the value of the signal (Abstract; Col. 4, Lines 32-41). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Horne with Jones in order to achieve high bit densities in a direct spread spectrum communication system by using circular spreading codes (Abstract).

As to claim 2, Jones further teaches a quadrature modulator (QPSK) for generating transmitted modulated signal in response to the first and second modulation signals (Fig. 7A; Col. 18, Lines 7-55).

As to claims 3 and 15, Jones further teaches a phase shifter for phase shifting the in-phase and quadrature signals; first multiplier for multiplying the in-phase signal and the first modulation signal to produce an in-phase signal component; a second multiplier for multiplying the quadrature signal and the second modulation signal to produce a quadrature signal component; and a summer for summing the in-phase and quadrature signal components together to produce an output signal (Fig. 7B3). Jones is silent about a radio frequency signal generator for generating and in-phase and quadrature radio frequency signals. One of ordinary skill in the art would clearly recognize that it is a design choice as to whether first upconverting the carrier reference signal to radio frequency signal and then obtaining the output quadrature modulated signal or to obtain the output quadrature modulated signal in intermediate frequency and then upconverting it to a radio frequency signal before transmission.

As to claims 4 and 16, Jones further teaches a means for converting an input bit stream into a sequence of first and second input data symbols (Fig. 7B1, means 464, 508, and 510) and the receiver further comprising a means for converting said first and second output data symbols into an output chip stream (Fig. 4B2, means 302; Col. 12, Lines 1-28).

As to claim 5, Jones further teaches the code sequence comprises M-chips, and said transmitter memory comprises an M-chip shift register for circular shifting the code sequence (Fig. 7B2, means 448; Col. 19, Lines 15-31).

As to claim 6, Jones further teaches a pulse shaping filters for converting the first and second encoded sequences into said first and second modulation signals (Fig. 7B3;

Col. 18, Lines 19-37). Jones is silent about first and second pulse shaping filters for first and second signal branches. One of ordinary skill in the art would clearly recognize that it is obvious to have two pulse shaping filters for the in-phase and quadrature signal components to pulse shape the in-phase and quadrature signal components.

As to claim 11, Jones teaches a transmitter (Fig. 7B1) for generating first and second modulation signals in response to first and second input data symbols (i.e. in-phase and quadrature components) in a communication system comprising: a transmit memory for storing (i.e. loading) a code sequence (i.e. mother or master code sequence); a first circular shifting means for circular shifting said code sequence by a first circular shift, said first shifting means being coupled to said mother code sequence generator; and a second circular shifting means for reversing said code sequence and circular shifting the reversed code sequence by a second circular shift, said second shifting means being coupled to said mother code sequence generator and generating a second encoded sequence (Fig. 7B1; Col. 19, Lines 15-31 and 60-67); a receiver for decoding a modulated signal comprising: a receiver memory for storing a code sequence (Fig. 4B2, means 272); a first correlator (means 274) coupled to the receiver memory for determining the correlation between a circular shifted version of the code sequence and the modulated signal; and a second correlator (means 275) coupled to the receiver memory for determining the correlation between reciprocal (i.e. first in last out register) of a circular shifted version of the code sequence and the modulated signal (Col. 11, Lines 34-67; Col. 12, Lines 1-29; Col. 21, Lines 1-30). Jones does not expressly teach that the circular shifting amount of the code sequence is based on the

value of the data symbol. Horne teaches shifting a circular code based on the value of the signal (Abstract; Col. 4, Lines 32-41). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Horne with Jones in order to achieve high bit densities in a direct spread spectrum communication system by using circular spreading codes (Abstract).

As to claim 12, Jones teaches a transmitter (Fig. 7B1) for generating first and second modulation signals in response to first and second input data symbols (i.e. in-phase and quadrature components) in a communication system comprising: a transmit memory for storing a code sequence (i.e. mother or master code sequence); a first circular shifting means for circular shifting said code sequence by a first circular shift, said first circular shift being determined by said first data symbol, said first shifting means being coupled to said mother code sequence generator; and a second circular shifting means for reversing said code sequence and circular shifting the reversed code sequence by a second circular shift, said second shifting means being coupled to said mother code sequence generator and generating a second encoded sequence (Fig. 7B1; Col. 19, Lines 1-31 and 60-67). Jones does not expressly teach a bi-directional register operable to store the encoded signal allowing the sequence to be read in either a forward or a reverse direction, said bidirectional register having first and second read directions; and a selector operable to select said first and second read directions according to whether said encode sequence corresponds to said first or second data symbol. One of ordinary skill in the art would clearly recognize that since Jones does spread the incoming inphase and quadrature signal components by using the circular

shifted code sequence for the inphase signal component and the reciprocal of the circular shifted of the same code sequence for the quadrature signal component and it is the same in terms of functionality; therefore, using a bidirectional register and a selector to obtain the forward and reverse code sequences seems obvious specially because using a bidirectional register is well known in the art and by employing a bidirectional register the number of registers to be used is reduced. Jones does not expressly teach that the circular shifting amount of the code sequence is based on the value of the data symbol. Horne teaches shifting a circular code based on the value of the signal (Abstract; Col. 4, Lines 32-41). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Horne with Jones in order to achieve high bit densities in a direct spread spectrum communication system by using circular spreading codes (Abstract).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam
May 14, 2006

KEVIN BURD
PRIMARY EXAMINER